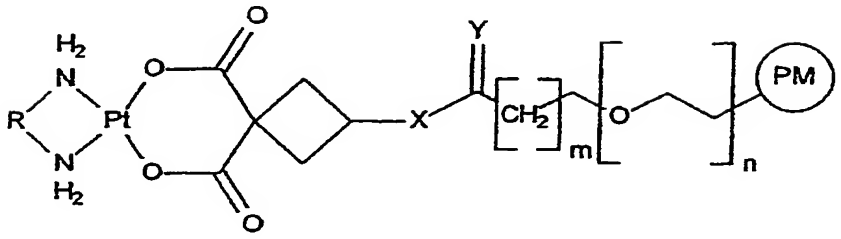
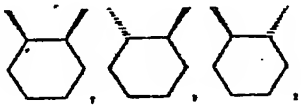
Claims

1. Platinum complex of the general formula I:



(I)

in which

R = 2H,  -$(CH_2)_i$- (i = 2 or 3);

X = O or NH;

Y = O, S or 2 H;

m = 0 to 5;

n = 0 to 6;

PM denotes a protein-binding group.

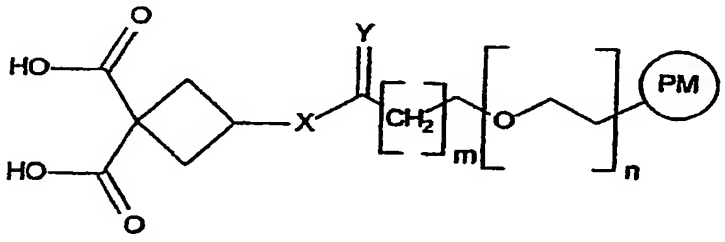
2. Platinum complex as claimed in claim 1,
characterized in that
PM is a maleinimide group, a 2-dithiopyridyl group, a halogen acetamide group, a halogen acetate group, a disulfide group, an acrylic acid ester group, a monoalkylmaleic acid ester group, a monoalkylmaleaminic acid amide group, an N-hydroxysuccinimidyl ester group, an isothiocyanate group or an aziridine group which can be optionally substituted.

3. Platinum complex as claimed in claim 2,
characterized in that
PM is a maleinimide group which can be optionally substituted.

4. Platinum complex as claimed in claim 3,
characterized in that
m < 2 and n = 1 to 4.

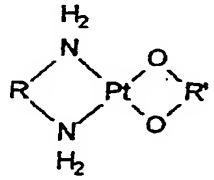
5. Platinum complex as claimed in claim 4,
characterized in that
X = O and Y = O.

6. Process for producing platinum complexes as claimed in one of the previous claims,
characterized in that
a cyclobutane-1,1-dicarboxylic acid derivative of the general formula IV



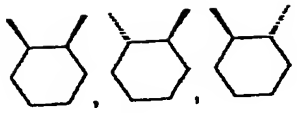
(IV)

in which
X = O or NH
Y = O, S or 2 H
m = 0 to 5
n = 0 to 6
and PM denotes a protein-binding group, is reacted with a platinum complex of the general formula V



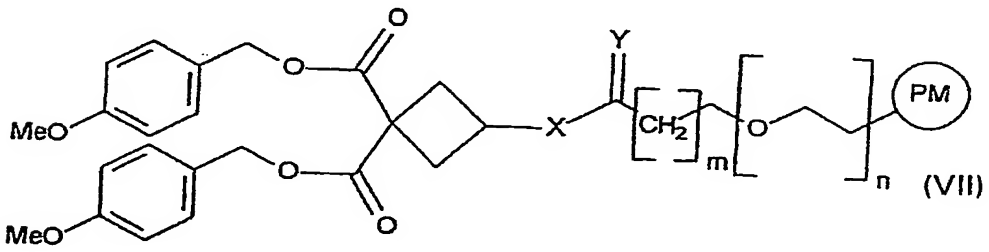
(V)

in which

R = 2 H,  $-(CH_2)_i-$ (i = 2 or 3)

R' = 2 NO_2, SO_2 or CO.

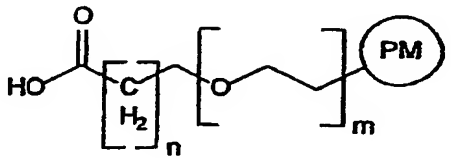
7. Process as claimed in claim 6,
characterized in that
the cyclobutane-1,1-dicarboxylic acid derivative of the general formula II is obtained by reacting a 4-methoxybenzyl-protected cyclobutane-1,1-dicarboxylic acid derivative of the general formula VII



in which
X = O or NH
Y = O, S or 2H
m = 0 to 5
n = 0 to 6
and PM denotes a protein-binding group, with trifluoroacetic acid and anisole.

8. Process as claimed in claim 7,
characterized in that

the cyclobutane-1,1-dicarboxylic acid derivative of the general formula VII is obtained by reacting bis(4-methoxybenzyl)-3-hydroxycyclobutane-1,1-dicarboxylate with a heterobifunctional cross-linker of the general formula VI



(VI)

in which

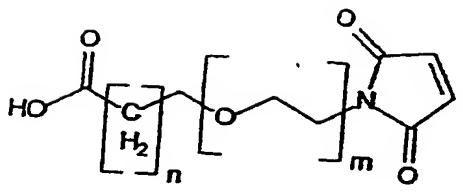
n = 0, 1

m= 1 to 6

and PM denotes a protein-binding group, in the presence of carboxylic acid activation reagents.

9. Process as claimed in claim 8,
characterized in that
N,N'-dicyclohexylcarbodiimide, *N,N'*-diisopropylcarbodiimide or (benzotriazole-1-yloxy)tris(dimethylamino)phosphonium hexafluorophosphate and most preferably 2-chloro-1-methylpyridinium iodide are used as carboxylic acid activation reagents.

10. Process as claimed in claim 8 or 9,
characterized in that
bis(4-methoxybenzyl)-3-hydroxycyclobutane-1,1-dicarboxylate is reacted with a maleinimidocarboxylic acid of the general formula VIa



(VIa)

in which

n = 0, 1

m = 1 to 6

using 2-chloro-1-methylpyridinium iodide.

11. Process as claimed in claim 8,

characterized in that

bis(4-methoxybenzyl)-3-hydroxycyclobutane-1,1-dicarboxylate is obtained by reacting bis(4-methoxybenzyl)-3-*tert*.-butyldimethylsiloxycyclobutane-1,1-dicarboxylate with tetrabutylammonium fluoride.

12. Process as claimed in claim 11,
characterized in that
bis(4-methoxybenzyl)-3-*tert.*-butyldimethylsiloxycyclobutane-1,1-dicarboxylate is obtained by reacting bis(4-methoxybenzyl)malonate with 1,3-dibromo-2-*tert.*-butyldimethylsiloxypropane.

13. Pharmaceutical preparation containing a platinum complex according to any one of the claims 1 to 5 as an active ingredient, optionally together with common auxiliary substances and/or pharmaceutical solvents.

14. Use of a platinum complex as claimed in any one of the claims 1 to 5 for the treatment of cancer diseases.

15. Process for producing a pharmaceutical preparation for treating cancer diseases,
characterized in that
a compound as claimed in any one of the claims 1 to 5 is transferred into a therapeutically acceptable solution.